K 2: Pulsed Power Technik

Zeit: Montag 15:30–15:45 Raum: HS 4

K 2.1 Mo 15:30 HS 4

Operation of an Array of Parallel Micro-Plasma Spark Gaps — •Klaus Frank[1], Hasib Rahaman[2], Byung Lee[2], and Sang Nam[2] — [1]University of Erlangen, Physics Department, Erlangen — [2]Pohang Accelerator Laboratory, Pohang, South Korea

Micro-plasma spark gaps in the high pressure region have specific applications in pulsed power due to their fast switching and high peak power capability. The peak power of short impulses at a load by a single spark gap at a very high repetition rates (˜ 1 MHz) is limited due to the relatively low breakdown voltage. The breakdown voltage at high repetition rate of a micro-plasma spark gap is significantly lower than the initial breakdown voltage. Operation of two or multiple micro-plasma spark gaps increases the breakdown voltage by enhanced recovery time at the cost of reduced repetition rate of each spark gap. The operation of an array of parallel operating micro-plasma spark gaps is studied at the Pohang Accelerator Laboratory, Pohang, South Korea. Experimental results of switching four spark gaps in parallel in the non-synchronized mode for two different configurations and additional results related to breakdown voltage waveform and their reproducibility will be presented. Furthermore, some experimental work was done to improve the operation of the spark gaps by optimizing external parameters, such as resistance and capacitance, with the goal to increase the output peak power as well as the average output power of the system.